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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,124	03/15/2004	Timothy N. Jones	018563-006010US	3509

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EXAMINER	
WILSON, JOHN J	

ART UNIT	PAPER NUMBER
3732	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/802,124	JONES ET AL.	
	Examiner	Art Unit	
	John J. Wilson	3732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-18 and 20-94* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-18 and 20-94* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/2/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-8, 15 and 20-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mushabac (5562448). Mushabac shows receiving data, column 10, lines 45-55, applying a test to find the nerve of a tooth, column 27, line 65-column 28, line 10. Determining the data for and identifying a tooth that contains the root nerve would be obvious to one of ordinary skill in the art in order to obtain a useful representation for modeling. Linking data that belongs to the same tooth is an inherent step in obtaining a model of the tooth. Using cross sections and line segments to determine the component is an obvious matter of choice in well known ways of analyzing images. Manner of inputting data is an obvious matter of choice in well known ways of providing data to the skilled artisan. To use well known computer graphic tools for this manipulation is an obvious matter of choice in the use of known tools for a known result to one of ordinary skill in the art. That the data can be stored as a 3D volumetric representation is an obvious matter of choice in known imaging to one of ordinary skill in the art. The specific mathematical algorithm used to find the desired portion is an obvious matter of choice in known algorithms for segmentation of data to one of ordinary skill in the art.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mushabac (5562448) as applied to claim 1 above and further in view of Andersson. Mushabac does not show data taken from a photographic image. Andersson teaches taking data from an image,

column 2, lines 57-60. It would be obvious to one of ordinary skill in the art to modify Mushabac to include using a photographic image as shown by Andersson in order to make use of art known ways to best gather needed data.

Claims 10-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mushabac (5562448) as applied to claim 1 above, and further in view of Yoon et al (5742700). Mushabac does not show identifying regions and finding boundary points. Yoon teaches that it is known to segment by boundary points, Fig. 3, including both automatic and manual segmentation. It would be obvious to one of ordinary skill in the art to modify Wu to include segmenting components using boundary segmentation as taught by Yoon in order to better manipulate the desired regions. The prior art teaches finding a component and determining the data points that belong to that component. Finding points outside a component and then finding the boundary points is merely obtaining an image by first finding its negative which would have been obvious to one of ordinary skill in the art in well known ways of finding images.

Claims 68-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al (5338198) in view of Yoon et al (5742700) and Andreiko et al (5395238).
Wu shows scanning and receiving a data set, finding a component and creating a model of the component using segmentation, column 7, lines 7-10. During the building of a digital model the data, the computer automatically applies tests to the incoming data to build the digital model including segmenting components, as an example see column 8, lines 6-15 of Wu. Yoon teaches that it is known to segment by boundary points, Fig. 3, including both automatic and manual segmentation. It would be obvious to one of ordinary skill in the art to modify Wu to include segmenting components using boundary segmentation as taught by Yoon in order to better manipulate the desired regions. The prior art teaches finding a component and determining the

data points that belong to that component. Finding points outside a component and then finding the boundary points is merely obtaining an image by first finding its negative which would have been obvious to one of ordinary skill in the art in well known ways of finding images. The above combination does not show using interproximal or gingival regions as the negative regions used to find a component. Andreiko teaches that it is known the find the interproximal and gingival regions of a digital model. It would be obvious to one of ordinary skill in the art to modify the above combination to include determining these regions as shown by Andreiko in order to make use of a known regions that delineate the desired component. To use well known computer graphic tools for this manipulation is an obvious matter of choice in the use of known tools for a known result to one of ordinary skill in the art. That the data can be stored as a 3D volumetric representation is an obvious matter of choice in known imaging to one of ordinary skill in the art. The specific mathematical algorithm used to find the desired portion is an obvious matter of choice in known algorithms for segmentation of data to one of ordinary skill in the art.

Response to Arguments

Applicant's arguments filed May 2, 2005 have been fully considered but they are not persuasive. With respect to claim 1, see the new rejection applied above. With respect to claims 68 and 91, finding a negative of an image in order to determine the image of the component desired is well known in image manipulation to one of ordinary skill in the art and would have been obvious. The specific negative regions that are used is merely a choice in known regions outside the desired component.

Conclusion

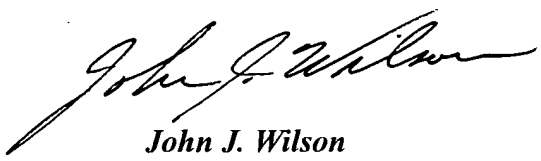
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Wilson whose telephone number is 571-272-4722). The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin P. Shaver, can be reached at 571-272-4720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John J. Wilson
Primary Examiner
Art Unit 3732

jjw
June 13, 2005